

TRANSITWAY CORRIDOR FEASIBILITY STUDY



Planning Commission
September 8, 2011 Meeting

Corridor C Transitway Preliminary Recommendation

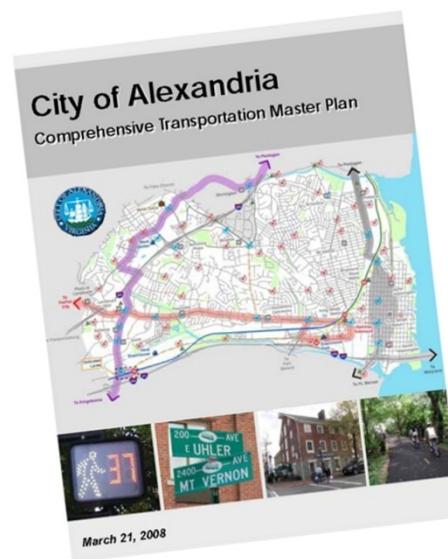
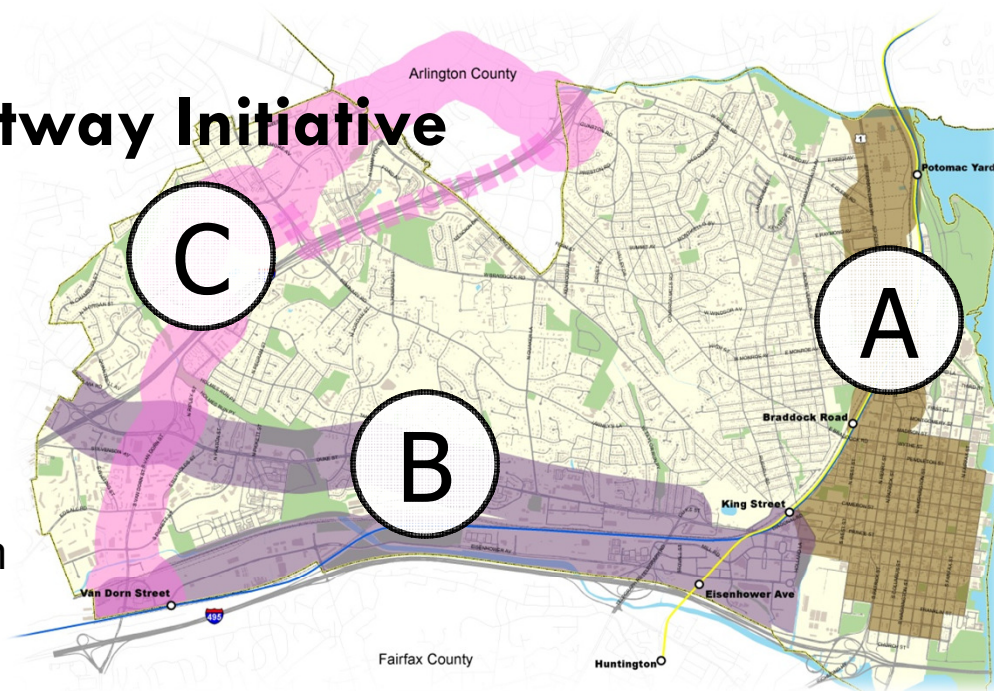


Kimley-Horn
and Associates, Inc.

TRANSITWAY CORRIDOR FEASIBILITY STUDY

City Transitway Initiative

- Corridors identified by Transportation Master Plan
 - Corridor A: North-South Corridor
 - Corridor B: Duke/Eisenhower
 - Corridor C: Beauregard/Van Dorn



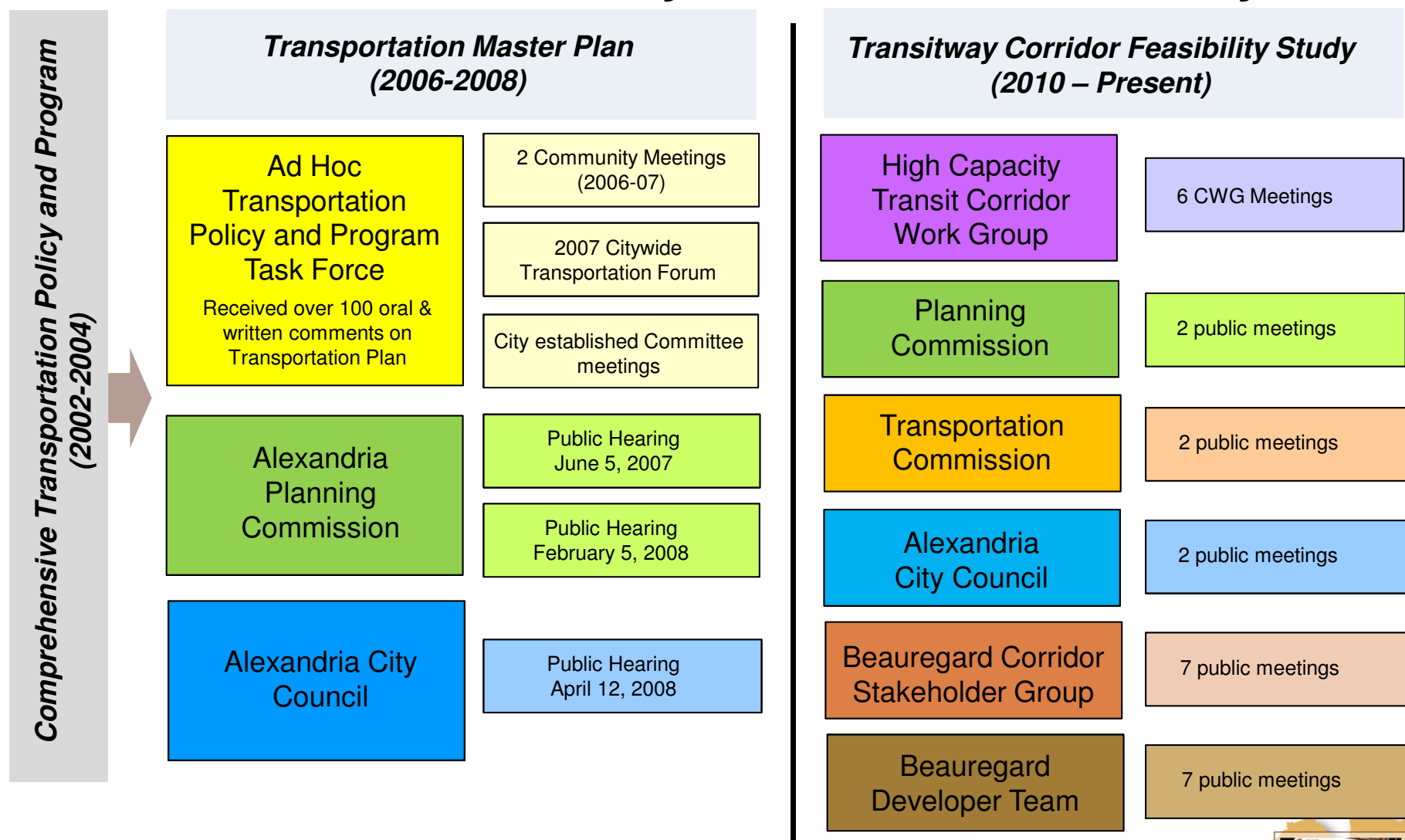
High Capacity Transit Corridor Work Group

To provide citizen inputs to such issues as include **route alignments, cross-sections, methods of operation, types of vehicles** which should be used in these corridors at specific times, **land use considerations, ridership, and financial implications.**

- City Council – 2 representatives
- Planning Commission
- Transportation Commission
- Budget & Fiscal Affairs Advisory Committee
- Chamber of Commerce
- Federation of Civic Associations – 2 representatives
- Resident with Transit Planning Expertise

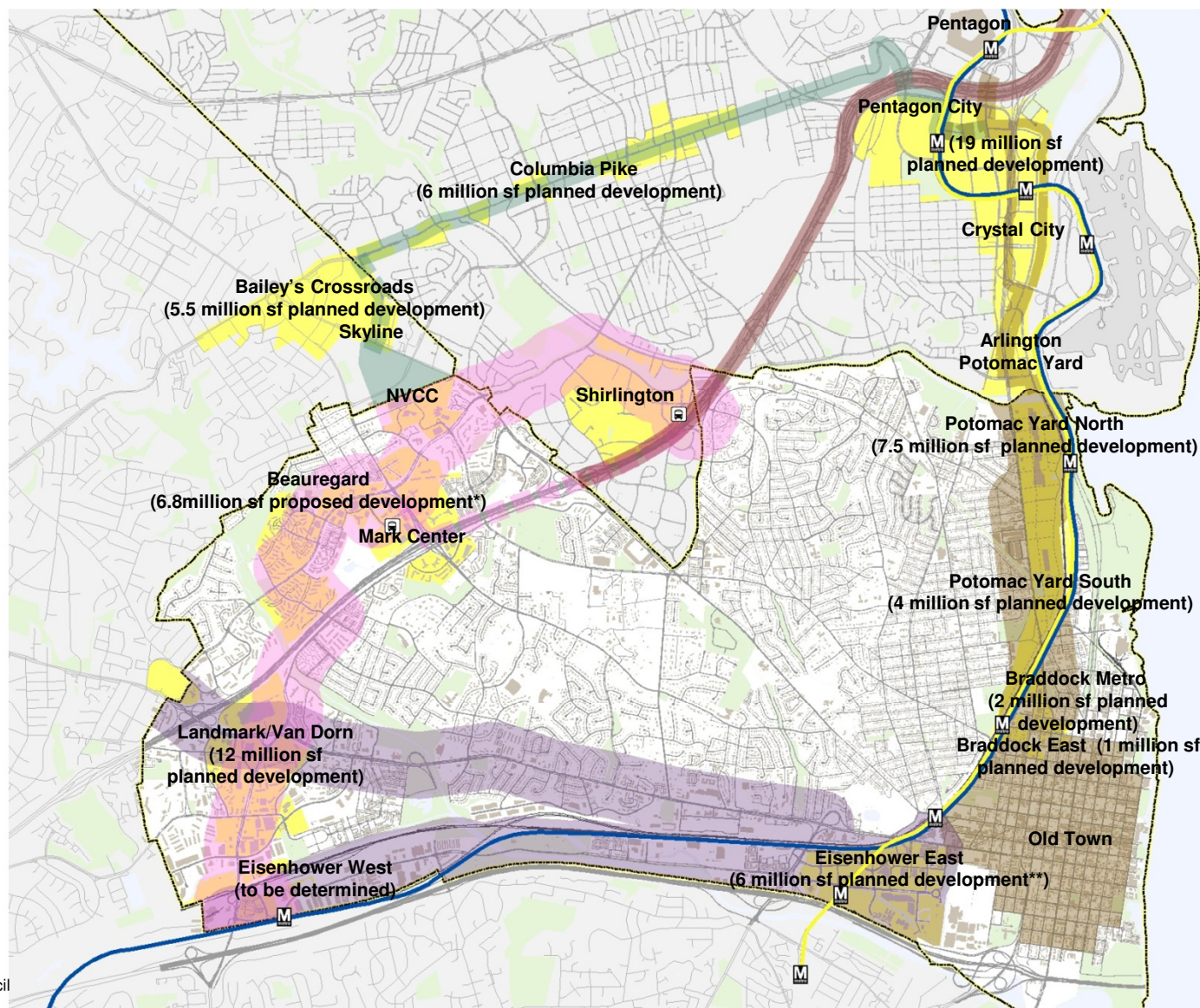


Corridor C Transitway Public Outreach History



Land Use and Transportation Connectivity

- Beauregard corridor plan
- Braddock Metro & Braddock East plans
- Columbia Pike Initiative
- Crystal City plan
- Eisenhower East plan
- Eisenhower West area development
- Landmark/Van Dorn corridor plan
- Mark Center plan
- Metrorail Blue & Yellow lines
- NVCC Community College master plan
- Old Town
- Pentagon
- Pentagon City development
- Potomac Yard plans (Arlington and Alexandria)
- Shirlington



Preliminary Alternatives Selected for Further Evaluation

Alternative B



- Possible preliminary phase of any other alternative
- Baseline for evaluation

Alternative D



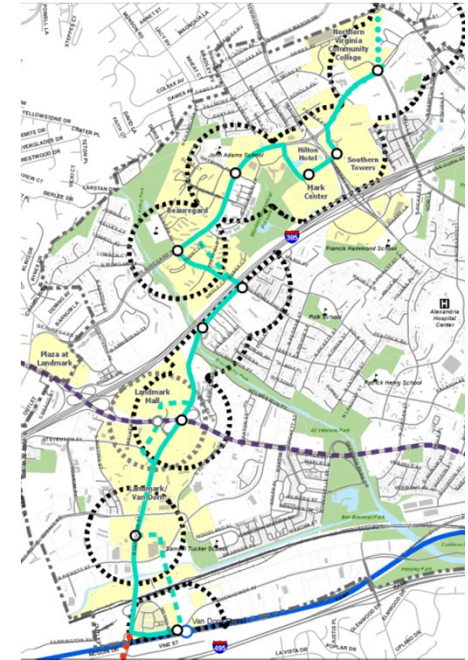
- Support from CWG
- BRT
- Shirlington connection
- Moderate capital cost

Alternative E



- Support from CWG
- BRT and streetcar
- Single seat ride between Columbia Pike and potential Beauregard Town Center
- Moderate-high capital cost

Alternative G



- Public support
- Streetcar option
- Compatibility with Columbia Pike
- High capital cost

Legend

— Rapid Bus

— Streetcar - Mixed Flow

— BRT (Bus Rapid Transit)

— Streetcar (dedicated lanes)

— Phased Route

— Optional Route
or Columbia Pike Connection

○ Transitway Station

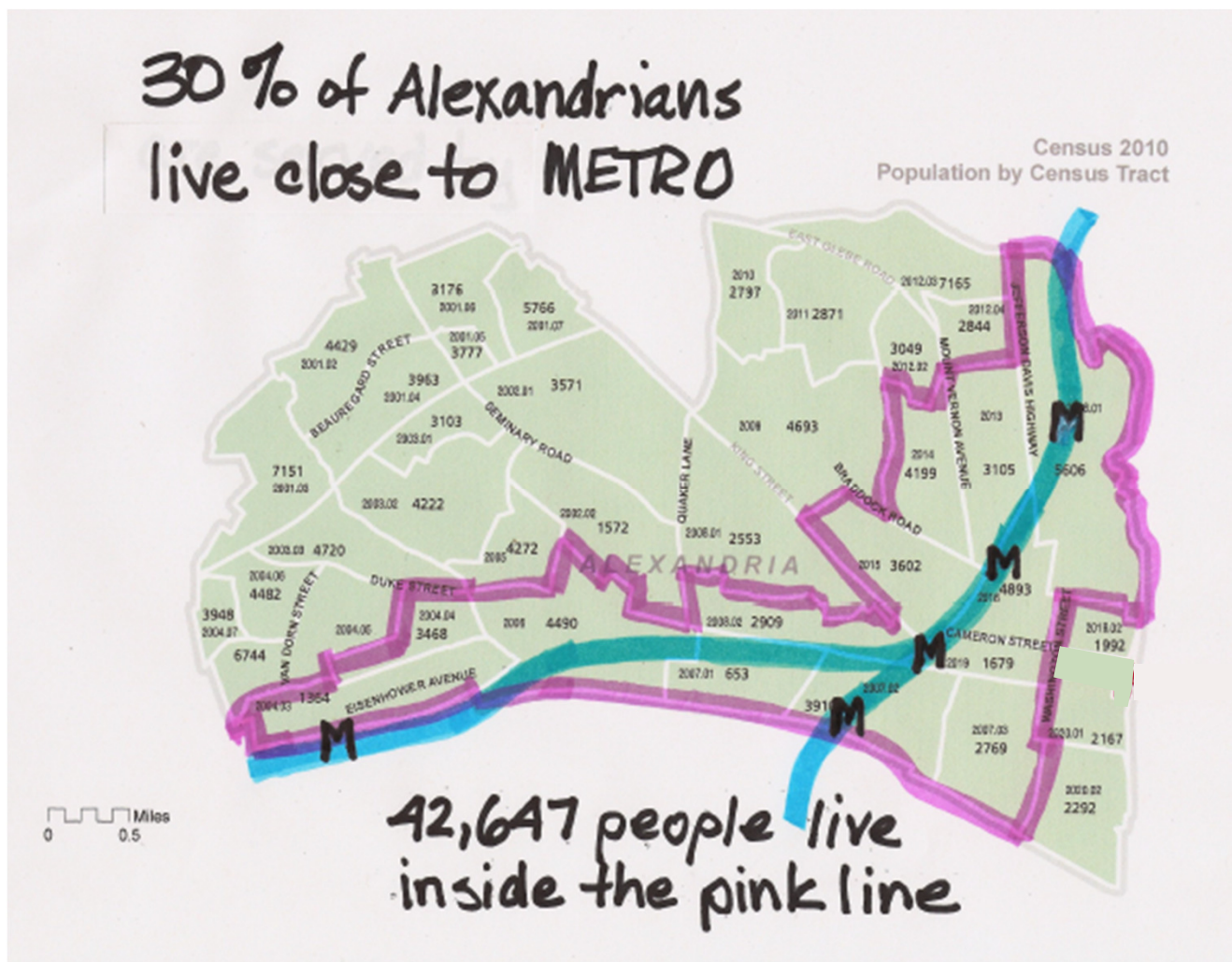
— Quarter-mile station area





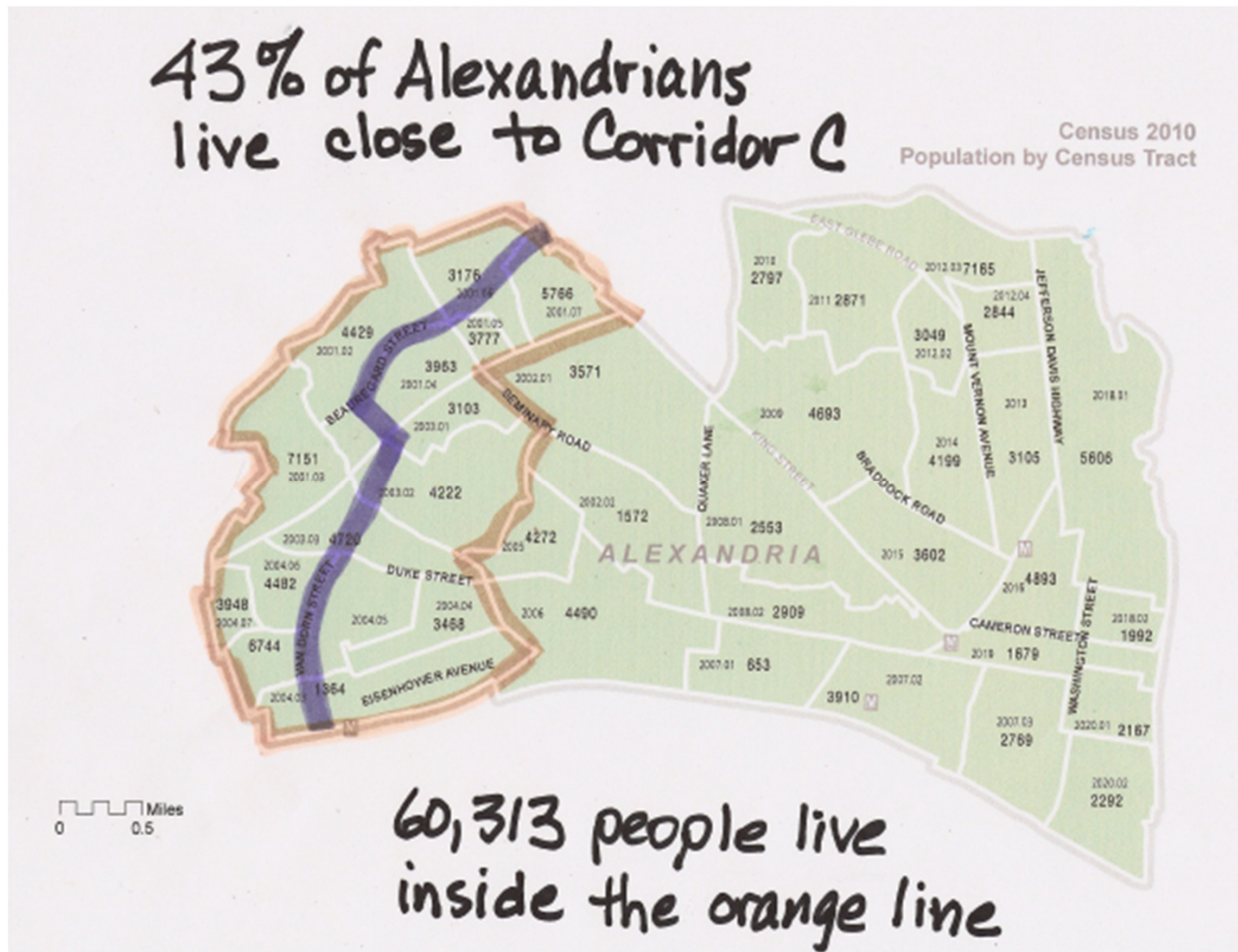
TRANSITWAY CORRIDOR FEASIBILITY STUDY

Corridor C – Existing High Capacity Transit Service



TRANSITWAY CORRIDOR FEASIBILITY STUDY

Corridor C – Existing High Capacity Transit Service



Planning-Level Ridership Forecasts

	Alternative			
	B (baseline)	D	E	G
Transit Mode:	Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:	Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Year 2035 Daily Weekday Ridership	-	12,500 to 17,500 riders/day	13,500 to 19,000 riders/day	15,000 to 20,000 riders/day

- Approximately 20% difference between lowest and highest daily ridership

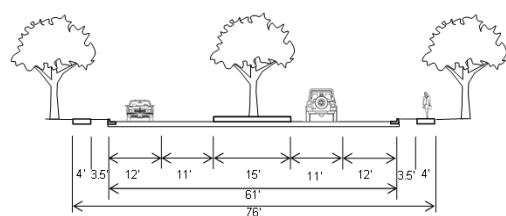
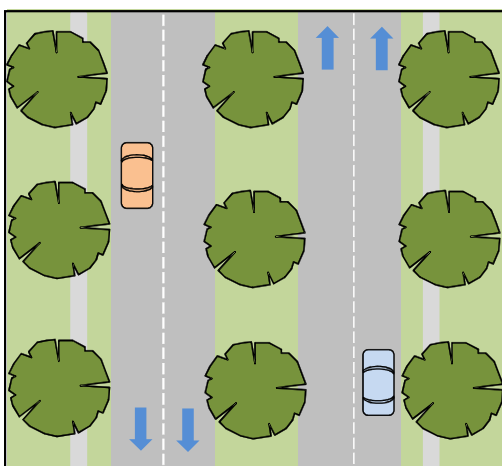
Secondary Evaluation - Effectiveness

Evaluation Criteria			Alternative			
			B <i>(baseline)</i>	D	E	G
Transit Mode:			Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:			Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Coverage	Service to Regional Destinations		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Service to Population, Employment, & Retail in the Corridor		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Transit Connectivity		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
Operations	Running-way Configuration(s)		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Corridor Length		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Capacity		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Interoperability		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Avoidance of Congestion		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Transit Travel Times	In Corridor	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
		Between Termini	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Ridership		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Intersection Priority		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
Align-ment	Alignment Quality		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Runningway Status		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
Phasing			N/A	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>

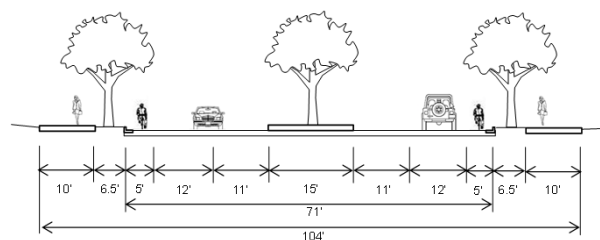
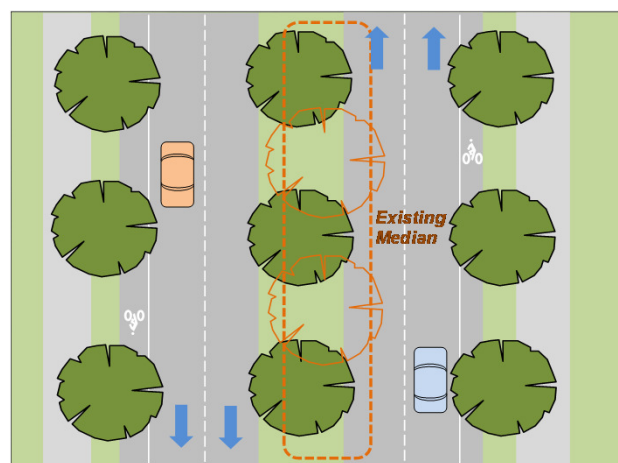
Rating:		Best		Fair		Poor
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Corridor C Transitway – Streetscape Impacts

Complete Streets



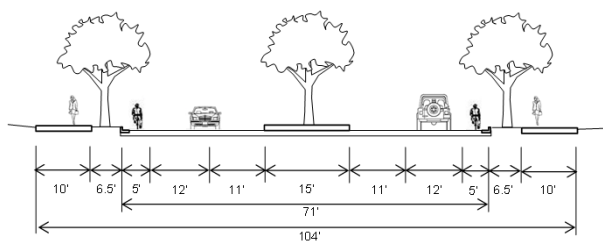
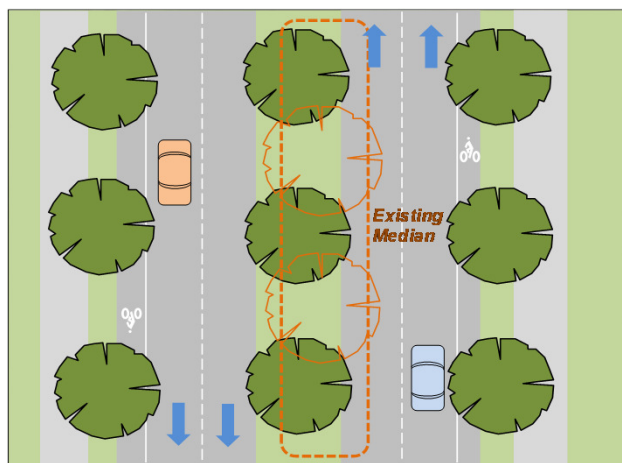
Existing (Suburban)



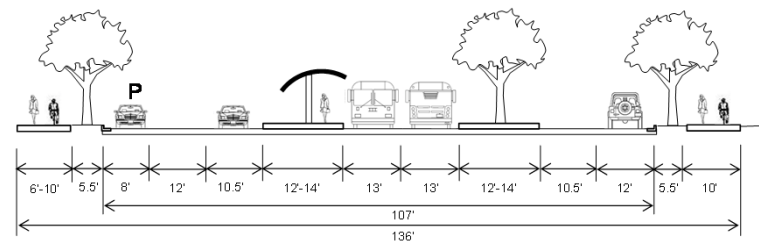
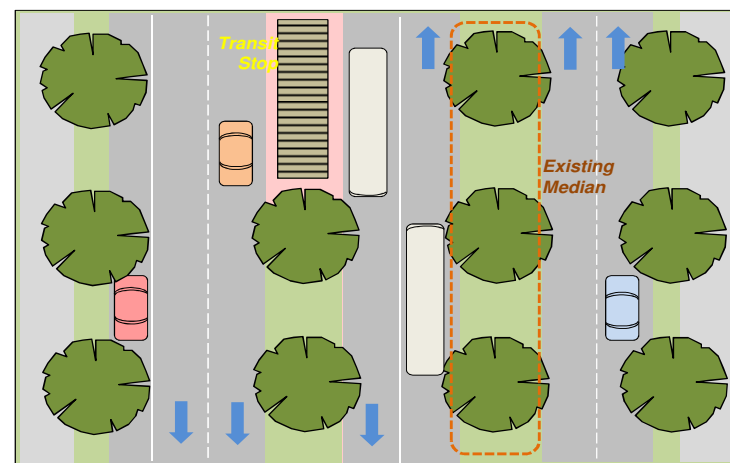
Complete Street

Corridor C Transitway – Streetscape Impacts

Transitway



Complete Street



Transitway



Traffic Analysis (Year 2035)

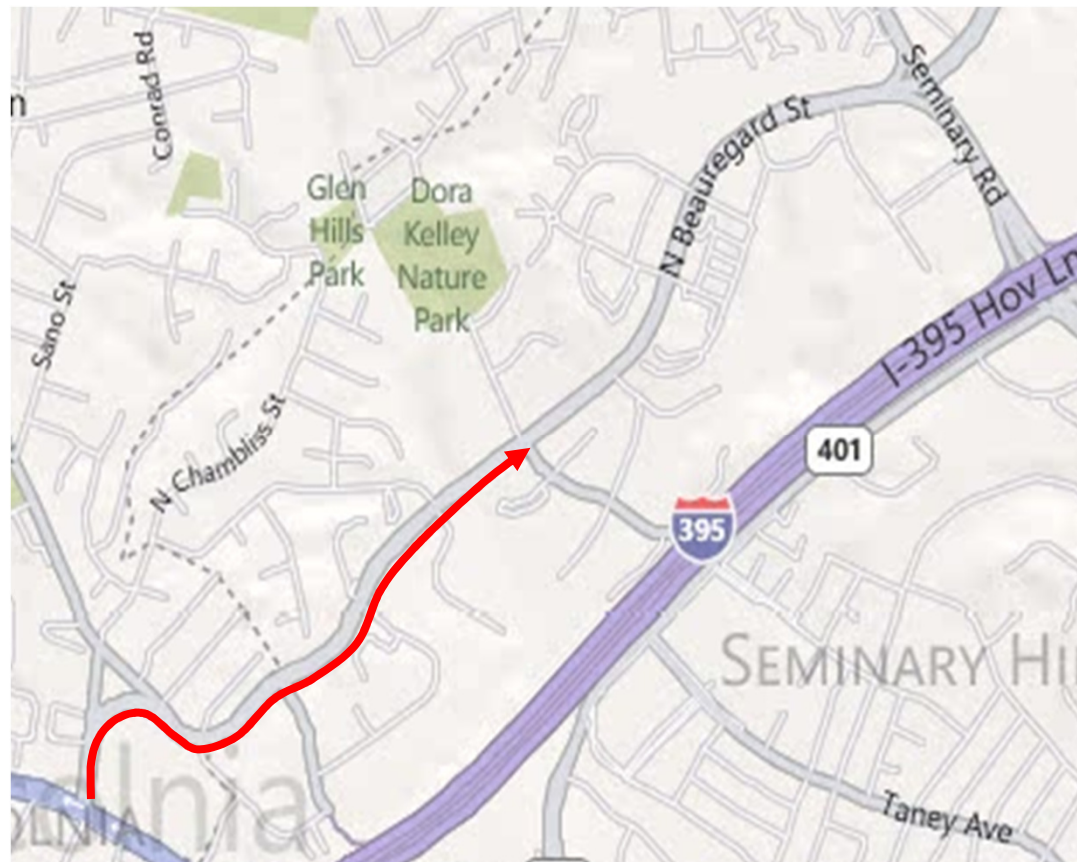
Convert existing lane (each direction) on Beauregard to dedicated transit lane

- One General Purpose (GP) lane each direction on Beauregard between Sanger and Mark Center Drive
- Two GP lanes each direction on Beauregard between Mark Center Dr. and Beauregard
- Reduction of daily volume along Beauregard of up to 14,000
- Increase of 8,000 vehicles per day on Van Dorn and parallel road (combined)
- **Result in excessive NB queue lengths (maximum queues) during AM peak (impacting upstream intersections) and delays along Beauregard**
- **Level of Service (LOS) F on Beauregard**



Traffic Queues

Convert existing lane (each direction) on Beauregard to dedicated transit lane (2035 AM)



Traffic Analysis (Year 2035)

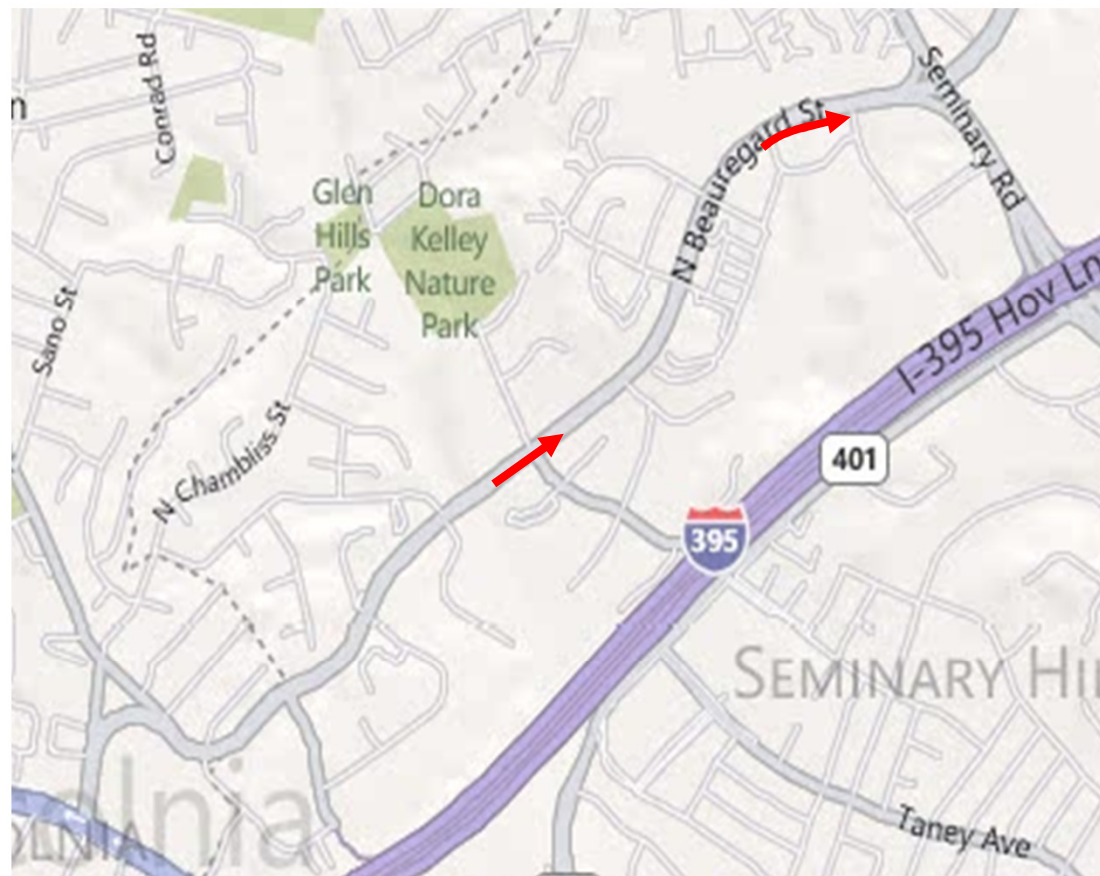
Maintain Two GP lanes each direction on Beauregard and Dedicated Transit Lanes

- Assumes parallel road only between Sanger and Mark Center Drive
- Two GP lanes each direction on Beauregard between Sanger and Beauregard
- Assumes construction of ellipse at intersection of Beauregard at Seminary
- **Some minor queues on NB Beauregard during AM Peak (Maximum queues)**
- **Level of Service operates at LOS E or better along Beauregard between Sanger and Seminary**
- Only one intersection operates at LOS E (Seminary / Beauregard, 2035 PM Peak)

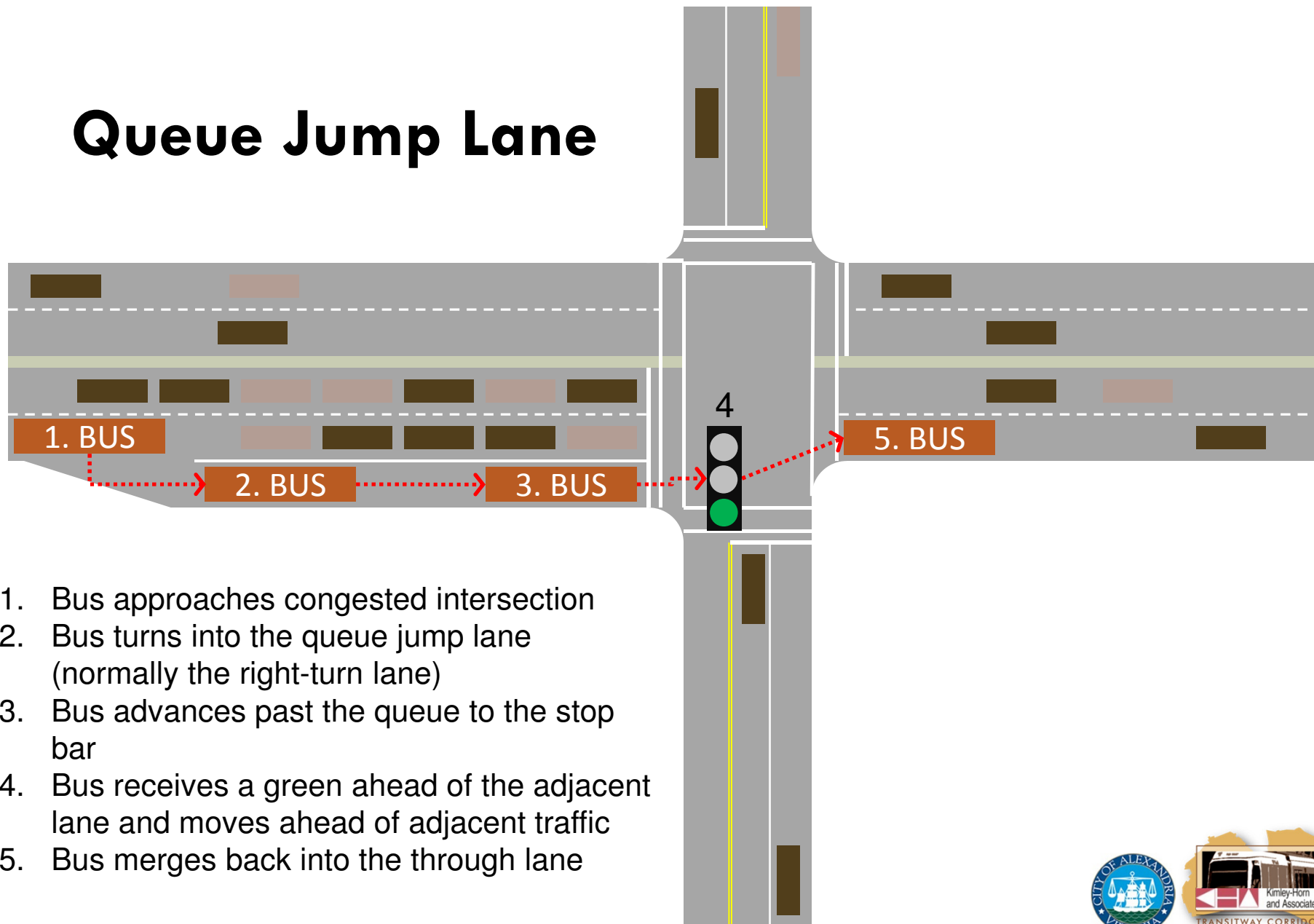


Traffic Queues (Year 2035 AM)

Two GP lanes each direction on Beauregard and Dedicated Transit Lanes



Queue Jump Lane



1. Bus approaches congested intersection
2. Bus turns into the queue jump lane (normally the right-turn lane)
3. Bus advances past the queue to the stop bar
4. Bus receives a green ahead of the adjacent lane and moves ahead of adjacent traffic
5. Bus merges back into the through lane



Planning-Level Cost Estimates

	Alternative			
	B (baseline)	D	E	G
Transit Mode:	Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:	Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Capital Cost Estimate¹ (exclusive of vehicles, based on modal cost per-mile within the City and maintenance facility cost estimation)	\$15 M	\$48 M	\$67 M	\$185 M
25-year Fleet Cost Estimate²	\$24 M	\$20 M	\$34 M	\$29 M
Right-of-Way Cost Estimate^{1, 3}	\$0 M	\$33 M	\$43 M	\$50 M
25-year Operating Cost	\$67 M	\$60 M	\$73 M	\$59 M
Planning-Level Cost Estimate⁴	\$106 M	\$161 M	\$ 217 M	\$323 M

Notes

- Costs assume that Arlington's Columbia Pike streetcar terminates at NVCC at a maintenance facility. Costs for Alternatives E and G would be higher if the Columbia Pike maintenance facility is located in Long Bridge Park due to the location of the terminus of Columbia Pike.
- Streetcar fleet costs are for the Alexandria portion of the streetcar only and are assumed to supplement Arlington's Columbia Pike fleet.
- Right of way costs do not include property along Eisenhower Avenue, within Northern Virginia Community College, or in locations where development contribution is expected.
- Planning level cost estimates are shown in year 2010 dollars and do not include additional contingency or escalation to a future year mid-point of construction. Totals listed do not include costs for major utility relocations/new service, or the capital costs for roadway/streetscape improvements that may be implemented concurrently, but are not required for the transit project. Alignments designated as "optional" or "phased" are not included in the cost.

Summary of Public Comments

- Need for a multi-phased approach to implementing the transitway
- Provide connectivity to local activity centers in Alexandria, Arlington, and Fairfax
- Important to provide pedestrian and bicycle connectivity
- Need dedicated lanes for system effectiveness
- Needs to be a high quality operation
- Do not worsen the traffic impacts
- Provide adequate facilities for emergency response and traffic operations



CWG Recommendation – May 19, 2011

*"Alternative D is the preferred alternative for phased implementation of transit in dedicated lanes in Corridor C until such time as Alternative G becomes feasible and can be implemented. This course of action is consistent with the Council's recent decision to provide dedicated lane transit along the segment of Corridor A that is north of Braddock Road. Evaluation and analysis will continue of Alternative D in preparation for future implementation of Alternative G. **Construction of transit in Corridor C shall be the first priority of Alexandria's transportation projects.** Each subsequent corridor shall be evaluated separately regarding the need to acquire additional right-of-way for dedicated lanes as discussed in the Transportation Master Plan."*



Corridor C Transitway – Recommended Operation

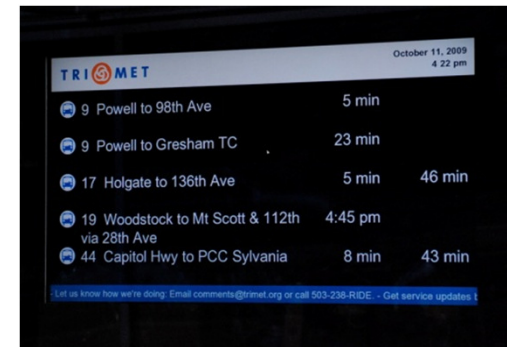
BRT Characteristics



Streetcar Characteristics



Station Characteristics



Runningway Configuration

Long Term Alignment

Long Term Alignment

LEGEND:

- Dedicated
- Shared
- Station



Next Steps for Corridor C

- City Council Meeting – September 13
- City Council Public Hearing and Recommendation – September 17
- Alternatives Analysis / Environmental Analysis – 2012-2013
- Preliminary Design – 2014
- Briefings to Transportation / Planning Commissions / Council regarding design elements
- Final Design and Right-of-way Acquisition – 2015
- Construction – 2016 - 2017



DISCUSSION & COMMENTS



Thank you for your attention!

For access to the information that was presented tonight, as well as other study information, please visit the project website at:

- <http://alexandriava.gov/HighCapacityTransit>

Once there, follow the link for the “High Capacity Transit Corridor Work Group”

